AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS

Claims 1-15 (canceled)

16. (previously presented) A method for automatic synthesis of a register file and functional unit-register file interconnect in a processor, based on an input specification of register file types in the processor, specified processor operations, desired instruction level parallelism among specified operations and functional units in the processor,

the method comprising:

for each type of register file specified in the processor, establishing a set of read/write port requests between the functional units and each of the register file types;

programmatically computing a resource allocation of register ports in the register file types to read/write port requests, including determining how to share a register port for two or more functional unit ports based on the specification of instruction level parallelism among the specified processor operations; and

programmatically synthesizing register files with the allocated read/write ports and interconnects between the functional units and the allocated read/write ports.

17. (original) The method of claim 16 wherein the resource allocation uses a contiguous allocation heuristic that simplifies interconnect layout by allocating register port requests from a functional unit to contiguous register ports.

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18. (previously presented) A computer readable medium having computer readable code that when executed causes the computer to perform the steps of the method of claim 16.

19. (previously presented) The method of Claim 16 wherein said input specification comprises a desired set of machine operations together with an abstract specification of concurrency and resource sharing constraints.

20. (previously presented) The method of Claim 19 wherein a concurrency constraint identifies which operations are allowed to be issued at the same time, while a resource sharing constraint identifies which operations cannot be issued at the same time.